South Dakota Influenza Surveillance Report: 2005-06 Season

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Summary

The 2005-06 influenza season was of moderate severity, prolonged in duration, and peaked late season. A total of 636 laboratory confirmed influenza cases, 459 influenza A and 177 influenza B, were reported to the South Dakota Department of Health (SD DOH) from the beginning of the influenza season starting October 2nd through season's end on May 27th. The peak of the influenza season occurred during the first full week of March, MMWR Week 10 ending March 11th.

Background

The Centers for Disease Control and Prevention (CDC) guidelines for the 2005-06 season are published in the *Prevention and Control of Influenza* MMWR on July 29th, 2005, Vol. 54, No. RR-8, http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5408a1.htm.

The 2005-06 trivalent vaccine virus strains included: A/California/7/2004 (H3N2)-like, A/New Caledonia/20/99 (H1N1)-like, and B/Shanghai/361/2002-like.

Approximately 86 million doses of influenza vaccine were produced for the 2005-06 influenza season. The doses were produced by four companies: Sanofi Pasteur, Inc., MedImmune Vaccines, Inc., Chiron Corporation, and GlaxoSmithKline, Inc. Despite the increased production from the 61 million courses produced during the 2004-05 influenza season, providers who ordered Chiron's Fluvirin experienced distribution problems as the manufacturer was slow to release vaccine. The majority of Fluvirin vaccine orders were filled during late November and into December.

SD DOH ordered 46,360 doses of influenza vaccine, 27,160 doses for Community Health Services field offices and 19,200 doses for clinics participating in the Vaccines For Children (VFC) program. This represents approximately 14% of the influenza vaccine available in South Dakota. In addition, SD DOH promoted the influenza prevention campaign *Stop it . . . Don't spread it*, distributing 312,000 posters in daily and weekly newspapers and to healthcare and childcare facilities.

Results from the 2005 Behavioral Risk Factor Surveillance System (BRFSS) showed South Dakota ranking 2nd in the nation with 76.3 percent of individuals aged ≥ 65 years receiving influenza vaccination. The survey also showed the state ranking 22nd in pneumococcal vaccination coverage with 66.3 percent of individuals in that age group receiving vaccine.

Epidemiology and Laboratory Surveillance

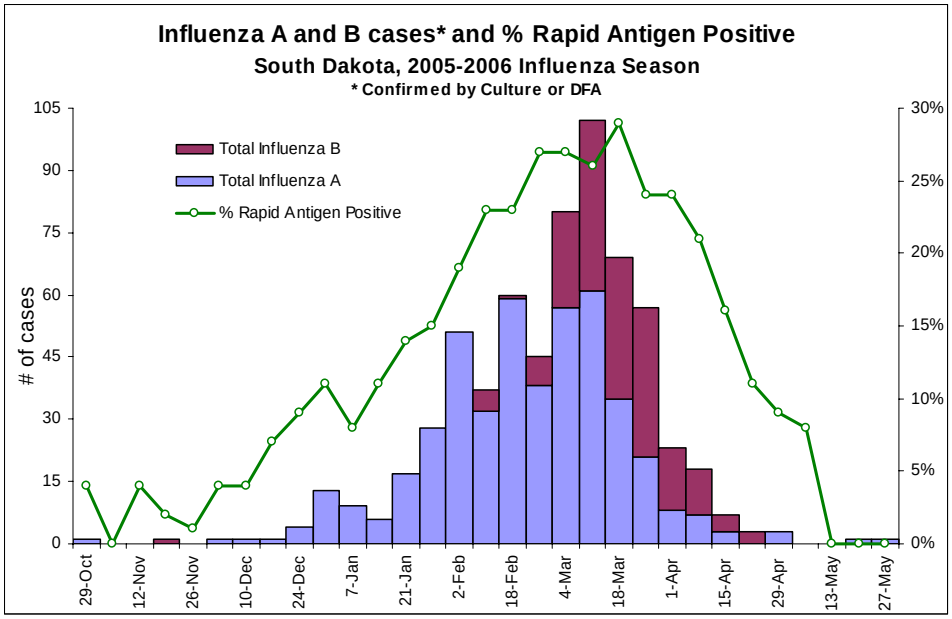
CDC's Division of Viral and Rickettsial Diseases, collaborating with the World Health Organization, collects and analyzes influenza viral isolates and data from state health departments and other surveillance sites. The information presents a state, national and global description of the seasonal influenza outbreak.

SD DOH participates in this international surveillance network through the Office of Disease Prevention (ODP) and South Dakota Public Health Laboratory (SDPHL). Surveillance for influenza is year-round, but intensifies October through May. The components of South Dakota's influenza surveillance program for 2005-06 included:

1) Influenza Sentinel Sites provided respiratory specimens to SDPHL for testing and characterization;
2) Eight Sentinel Provider Network physicians submitted influenza-like illness* (ILI) data to CDC;
3) SDPHL conducted virologic surveillance through PCR and culture testing;
4) ODP received aggregate rapid antigen reports from hospitals, clinics, and laboratories weekly;
5) ODP collected laboratory confirmed cases data of direct fluorescent antibody (DFA) and culture positive specimens;
6) Pediatric and adult mortality surveillance was reviewed by ODP from case reporting and death certificate review; and
7) Facility reports of influenza outbreaks in institutions such as schools, nursing homes, and daycares helped document the extent of transmission.

* Influenza-like illness is defined as illness with fever (≥ 100° F) and a cough or a sore throat.

The first case of influenza identified in South Dakota was during MMWR Week 43, ending October 29th, 2005. The case, a 23 month-old male from Douglas County, was positive for influenza A by DFA at the University of South Dakota Clinical Virology Laboratory (USD-CVL) in Sioux Falls and later culture confirmed at the SDPHL.



Following the first positive detection, influenza activity remained low until January. Activity then steadily increased in both percentage of positive rapid antigen tests and laboratory confirmed cases until the peak was reached during the first full week of March, MMWR Week 10, ending March 11th. This coincided with the peak in national influenza test data. Thereafter, influenza activity rapidly decreased with less than 10 confirmed cases being reported after April 15th.

A total of 636 influenza isolates, 470 (74%) influenza A and 166 (26%) influenza B, were reported to SD DOH from SDPHL and USD-CVL in Sioux Falls and Rapid City. Of 470

influenza A isolates, 72 (15%) subtyped as A/H3N2, 95 (20%) subtyped as A/H3, and 303 (64%) were not subtyped. No influenza B isolates were further characterized.

Viral Respiratory Reports
SDPHL and USD-CVL
Oct 2, 2005 – May 27, 2006

	SDPHL	USD-CVL	TOTAL
Influenza A	189*	281	470
Influenza B	46	120	166
Adenovirus	0	98	98
RSV	6	823	829
Parainfluenza-1	8	179	187
Parainfluenza-2	3	23	26
Parainfluenza-3	1	12	13
Parainfluenza-4	0	16	16
TOTAL Tested	462	5668	6130

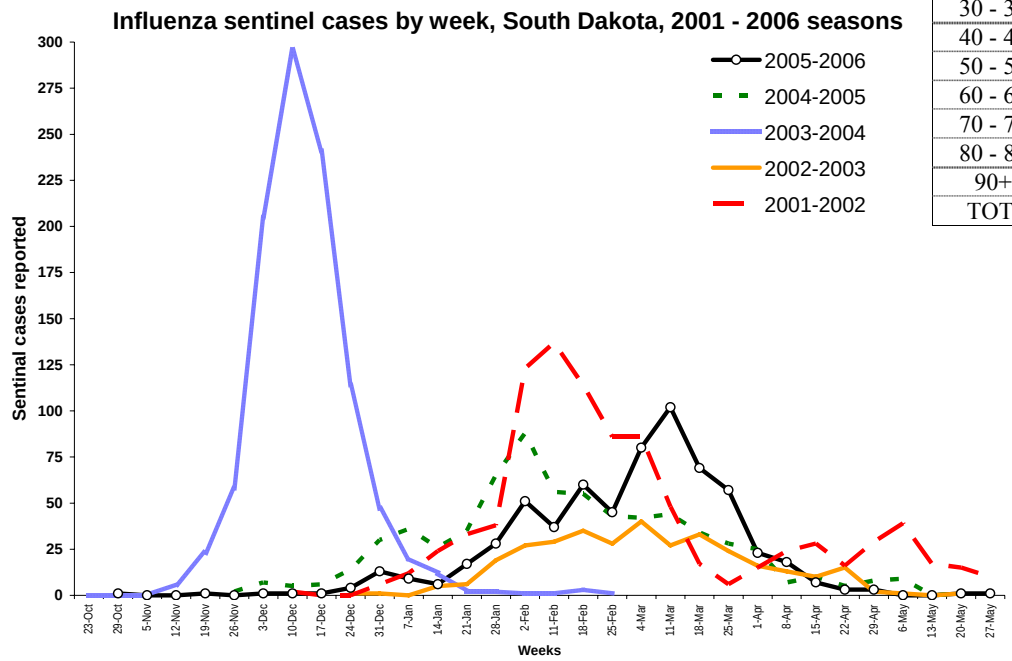
*72 isolates were Influenza A/H3N2
In cooperation with Influenza Sentinel Sites

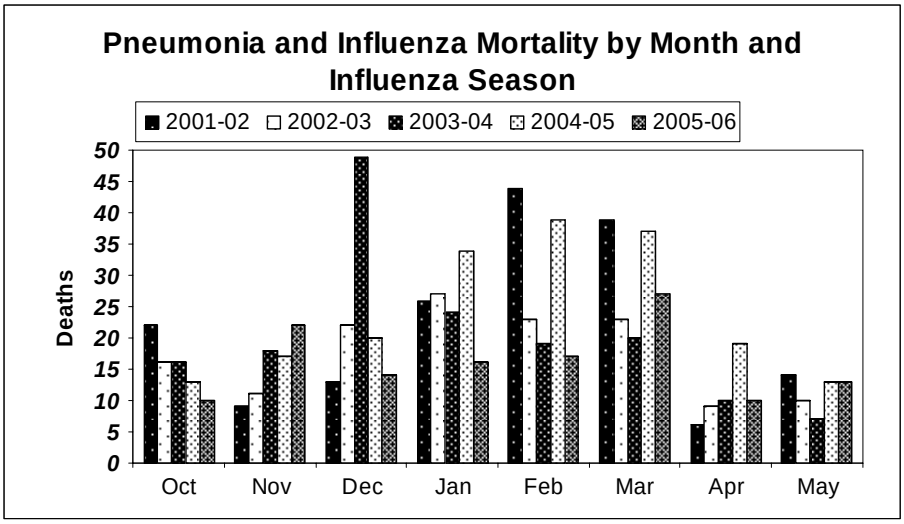
Other viral respiratory pathogens reports included 98 adenovirus, 187 parainfluenza type 1, 26 parainfluenza type 2, 13 parainfluenza type 3, 16 parainfluenza type 4, and 829 respiratory syncytial virus (RSV). The outbreak of RSV began late in November in western South Dakota. The virus then increased in incidence, peaking in the west during MMWR Week 52, ending December 31st, 2006. The virus was also moving eastward and the eastern peak occurred three weeks later on MMWR Week 3, ending January 21st, 2006. The state's peak in RSV incidence occurred during MMWR Week 1, ending January 7th, 2006. RSV remained a significant cause of respiratory illness through the end of March.

Age at time of illness onset and gender data were available for 576 influenza cases. Of 576 cases, 230 (40%) were in children <10 years of age. The next most affected age group was 10 to 19 year olds with 136 cases (24%). Of 576 cases, males accounted for 47% and females for 49% of the influenza morbidity with 4% of cases unknown.

Age Distribution of Reported Influenza Cases, South Dakota, 2005-2006 Season.

Age group	#	Percent
0 - 9 yr	230	40%
10 - 19 yr	136	24%
20 - 29 yr	37	6%
30 - 39 yr	39	7%
40 - 49 yr	27	5%
50 - 59 yr	30	5%
60 - 69 yr	20	3%
70 - 79 yr	25	4%
80 - 89 yr	26	5%
90+ yr	6	1%
TOTAL	576	100%





Eleven South Dakota residents died due to influenza and its complications during the 2005-06 influenza season. Gender breakdown was 55% male and 45% female. The median age among those who died was 81, with an age range of 64-101 years. During the season, 129 South Dakotans died from pneumonia or influenza (provisional data).

National Influenza Surveillance Data

The percentage of positive influenza tests and total number of isolates testing positive increased steadily starting in December and peaked in early March during Week 10, ending March 11th.

A total of 135,973 respiratory specimens were tested for influenza viruses; 17,068 (13%) were positive, 13,857 (81%) were influenza A and 3,211 (19%) were influenza B. Among the influenza A isolates subtyped 93% were influenza A/H3N2, and 7% were influenza A/H1N1. (Provisional data)

Of 503 influenza A/H3N2 isolates characterized, 381 (76%) were A/California/7/2004-like, and 70 (14%) were A/Wisconsin-like (A/Wisconsin/67/2005 is the H3N2 component of the 2006-07 vaccine). Of 237 influenza B isolates characterized, 184 (78%) were similar to B/Ohio/1/2005 (B/Victoria lineage) which is the influenza B component of the 2006-07 vaccine, 8 (3%) were similar to B/Shanghai/361/2002 (2005-06 vaccine component) and 43 (18%) were characterized as B/Florida/07/2004-like (a minor antigenic variant of B/Shanghai/361/2002). (Provisional data)

The ACIP *Recommendations on Prevention and Control of Influenza* and 2006-2007 vaccine composition can be found in the July 28th, 2006 MMWR Vol. 55, No. RR-10 at http://www.cdc.gov/mmwr/index.html. During the influenza season, weekly summary reports are posted on the SD Department of Health Web site at: www.flu.sd.gov